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EXAMINER	
CHRISS, ANDREW W	

ART UNIT	PAPER NUMBER
2619	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/759,698	RABBAT ET AL.	
	Examiner	Art Unit	
	Andrew Chriss	2619	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 October 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-33* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's amendment, filed October 2, 2007, has been entered and carefully considered.

2. In view of Applicant's amendment to Claims 12-22, rejection of said claims under 35 U.S.C. 101 is withdrawn.

3. The amendment filed October 2, 2007 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: The claimed computer readable medium in Claims 12-22 is not supported in the original disclosure.

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. **Claims 12-22** rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The claimed "computer readable medium" was not described in the original disclosure and, as such, constitutes new matter.

Claim Rejections - 35 USC § 102

6. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

7. **Claims 1, 8, 9, 12, 19, 20, 23, 30, and 31** are rejected under 35 U.S.C 102(e) as being anticipated by Mukherjee et al (Pub # US2004/0111651 A1), hereinafter Mukherjee.

Regarding Claims 1, 12, and 23, Mukherjee clearly discloses that a method, computer readable medium (paragraph 0033), and a network node (paragraph 0035) for provisioning protection paths comprising:

- determining network configuration information for a network formed by a plurality of nodes (The WDM network illustrated in FIG. 1 includes nodes 1 through 24, which are coupled together as illustrated by lines, [0035], page 2);
- identifying a working path from a source node to a destination node spanning one or more intermediate nodes, wherein the source node, the destination node, and the intermediate nodes are all nodes in the network (Also illustrated in FIG. 1 is source node, S, and destination node, D. Node S is coupled to the WDM network through an ingress node 3, while node D coupled to the WDM network through an egress node 21, [0036], lines 1-3; As illustrated by solid arrows in FIG. 1, a primary path, including nodes 3, 7, 9, 12, 16, and 21 has been established between ingress node 3 and egress node 21, [0038], lines 1-3);

- determining a timing constraint for failure recovery (In WDM mesh protection, the failure-recovery time is determined by three main factors, [0010]; failure detection time, [0011]; failure notification time, [0012]; and restoration time, [0013]);
- identifying potential nodes in the network that satisfy the timing constraint based on the network configuration information (Next, the system calculates a chain of restorable cycles within the WDM network that guarantee the stated failure-recovery time, [0054], lines 7-9);
- selecting a protection path from the source node to the destination node spanning a second set of one or more intermediate nodes, the second intermediate nodes selected from the potential nodes (In order to establish the primary path and the backup path (paragraph 0037), a calculation is performed that repeatedly selects a link or series of links for a primary path, and then attempts to find a link or a series of links to form a backup path, which guarantees the stated failure-recovery time. Finally, the system selects a section of each restorable cycle as the primary path between the source and destination, [0054], lines 9-14); and
- setting up the protection path (this selected section of the restorable cycle is typically the shortest section of the restorable cycle between the source and destination, [0054], lines 15-17).

Regarding Claims 8, 19, and 30, Mukherjee clearly shows and discloses the claimed invention as applied to claim 1 above, and in addition, Mukherjee further teaches wherein determining the timing constraint comprises receiving a configured value for the working path (see Fig. 6, The system starts when the system receives a connection request to connect a source

to a destination (step 602). This connection request includes a stated failure-recovery time. Next, the system calculates a chain of restorable cycles within the WDM network that guarantee the stated failure-recovery time (step 604). This calculation involves repeatedly selecting a link or series of links for a primary path, and then attempting to find a link or a series of links to form a backup path, which guarantees the stated failure-recovery time, [0054], lines 3-12).

Regarding Claims 9, 20, and 31, Mukherjee clearly shows and discloses the claimed invention as applied to claim 1 above, and in addition, Mukherjee further teaches wherein the network has a mesh topology (see Fig. 1, in WDM mesh protection, [0010]), and wherein each of the nodes in the network comprises an optical network node (One embodiment of the present invention provides a system that guarantees a stated failure-recovery time in an optical wavelength-division multiplexing (WDM) network. The system operates by first receiving a request at an ingress node of the WDM network to establish a connection from a source to a destination through the WDM network, wherein the request includes the stated failure-recovery time, [0017], lines 1-7).

Claim Rejections - 35 USC § 103

8. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

9. **Claims 2-4, 13-15, and 24-26** are rejected under 35 U.S.C. 103(a) as being unpatentable over Mukherjee in view of Elie-Dit-Consaque et al (United States Patent Application Publication US 2004/0218525 A1), hereinafter Elie-Dit-Consaque.

Regarding Claims 2, 13, and 24, Mukherjee clearly shows and discloses the claimed invention as applied to claims 1, 12, and 23 above, and in addition, Mukherjee further teaches wherein the network configuration information comprises timing information, wherein the timing information includes data regarding recovery response times for the nodes in the network (This calculation involves repeatedly selecting a link or series of links for a primary path, and then attempting to find a link or a series of links to form a backup path, which guarantees the stated failure-recovery time, [0054], lines 9-12; In WDM mesh protection, the failure-recovery time is determined by three main factors, [0010]; failure detection time, [0011]; failure notification time, [0012]; and restoration time, [0013]). Mukherjee, however, does not specifically disclose that the network configuration information comprises topological information wherein the topological information describes the interconnections between the nodes in the network. In the same field of endeavor, Elie-Dit-Consaque et al. discloses that further comprising topological information wherein the topological information describes the interconnections between the nodes in the network (FIGS. 5A-5E illustrate different topological stages of an exemplary network 500 wherein multiple backup paths may be computed in accordance with the teachings of the present invention depending on link disjointedness and/or node disjointedness, [0032], lines 1-5). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to include the topological information describes the interconnections between the nodes in the network because it may be to maximize the possibility that the network can be restored using this information in the event of a failure.

Regarding Claims 3, 14, and 25, the combination of Mukherjee and Elie-Dit-Consaque clearly shows and discloses the claimed invention as applied to claim 2, 13, and 24 above, and in

addition, Mukherjee further teaches wherein the timing information indicates propagation delays for control messages passing between the nodes in the network (failure detection time (FDT): the time needed for the nodes around the failure point to detect the failure [0011], lines 1-3; failure notification time (FNT): the time needed to notify the source node of the connection that a failure has occurred, [0012], lines 1-3) and reconfiguration delays for the nodes in the network to reconfigure in the event of a failure recovery (restoration time (RT): the time needed for dynamic discovery of backup resources [0014], lines 1-3).

Regarding Claims 4, 15, and 26, the combination of Mukherjee. and Elie-Dit-Consaque clearly shows and discloses the claimed invention as applied to claim 3, 14, and 25 above, and in addition, Mukherjee further teaches wherein identifying the potential nodes that satisfy the timing constraint (attempting to find a link or a series of links to form a backup path, which guarantees the stated failure-recovery time, [0054], lines 11-12) comprises identifying selected ones of the nodes in the network that can provide failure recovery within the timing constraint based upon the propagation delays and the reconfiguration delays (Note that the maximum failure-recovery times for the three restorable cycles shown in FIGS. 3-5 are 41.25 ms, 41.5 ms, and 25.5 ms, respectively. These restorable cycles, therefore, can meet a stated failure-recovery time of 41.5 ms or greater, [0052], lines 1-5; also see [0049] and [0051]).

10. **Claims 5, 10, 16, 21, 27, and 32** are rejected under 35 U.S.C. 103(a) as being unpatentable over Mukherjee in view of Finn et al (US Patent #6728205 B1), hereinafter Finn.

Regarding Claims 5, 16, and 27, Mukherjee clearly shows and discloses the claimed invention as applied to claims 1, 12, and 23 above, except for further comprising maintaining

obligation information specifying a plurality of failure obligations, each failure obligation indicating, with respect to one of the nodes in the network, obligations of other ones of the nodes in the network given a failure of the one node. In the same field of endeavor, Finn et al discloses that further comprising maintaining obligation information specifying a plurality of failure obligations, each failure obligation indicating, with respect to one of the nodes in the network, obligations of other ones of the nodes in the network given a failure of the one node (Fig. 14, Processing begins in decision block 320 where each of the nodes in the network detect new failures. The node periodically performs those steps necessary to detect failures, column 40, lines 44-47; Processing then proceeds to Step 400 where a failure is detected at a node. It should be noted that this step is repeated at all nodes which detect a failure, column 41, lines 15-17). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to include this method because there is a growing trend and reliance on such networks owing to increasing reliance on and use of high-speed communication networks and the requirement that these communication networks be robust in the case of certain failures.

Regarding Claims 10, 21, and 32, Mukherjee clearly shows and discloses the claimed invention as applied to claims 1, 12, and 23 above, except for further comprising: identifying a fault condition at a reporting one of the nodes in the network; generating a fault message identifying the fault condition; and broadcasting the fault message to all of the nodes in the network. In the same field of endeavor, Finn et al. discloses that further comprising:

- identifying a fault condition at a reporting one of the nodes in the network (It should also be noted that a node does not initially know whether a failure is due to a failure of a link or another node. The particular type of failure (i.e. a link failure or node

failure) is determined by the node which detects the failure by information received from other nodes in a so-called reconciliation process, column 41, lines 17-23)

- generating a fault message identifying the fault condition; and (Fig. 15A, If it is determined that the node is an intermediate node, then as shown in step 413 the flag x is set to a first predetermined value (e.g. one) to indicate that the node is an intermediate node on circuit Xk, column 42, lines 36-39)
- broadcasting the fault message to all of the nodes in the network (Processing then flows to Step 415 where the failure message on all operational outbound links on the secondary graph Rm from the node detecting the failure is sent, column 42, lines 39-42).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to include this method because there is a growing trend and reliance on such networks owing to increasing reliance on and use of high-speed communication networks and the requirement that these communication networks be robust in the case of certain failures.

11. **Claims 6, 17, and 28** are rejected under 35 U.S.C. 103(a) as being unpatentable over Mukherjee in view of Elie-Dit-Consaque and further in view of Finn. Mukherjee clearly shows and discloses the claimed invention as applied to claims 1, 12, and 23 above, and in addition, Mukherjee further teaches wherein identifying the potential nodes in the network that satisfy the timing constraint further comprises identifying the potential nodes in the network that satisfy the timing constraint ([0054], lines 7-9). Mukherjee., however, does not specifically disclose that the potential nodes based on the network configuration information and the failure obligations. In

the same field of endeavor, Elie-Dit-Consaque et al. discloses the potential nodes based on the network configuration information (FIGS. 5A-5E, [0032], lines 1-5). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to include the potential nodes based on the network configuration information because it may be to maximize the possibility that the network can be restored using this information in the event of a failure. The combination of Mukherjee and Elie-Dit-Consaque as discussed above shows the limitations claimed, except they do not specifically disclose that the potential nodes based on the failure obligations. In the same field of endeavor, Finn discloses that the potential nodes based on the failure obligations (see Fig. 14, column 40, lines 44-47; column 41, lines 15-17). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to not only use the combination of Mukherjee and Elie-Dit-Consaque but also include potential nodes based on the failure obligations as taught by Finn because there is a growing trend and reliance on such networks owing to increasing reliance on and use of high-speed communication networks and the requirement that these communication networks be robust in the case of certain failures.

12. **Claims 7, 18, and 29** are rejected under 35 U.S.C. 103(a) as being unpatentable over Mukherjee in view of Jaber et al (Pub #US20020006112 A1), hereinafter Jaber. Mukherjee. clearly shows and discloses the claimed invention as applied to claims 1, 12, and 23 above, except for further wherein determining the timing constraint comprises: identifying a class of service associated with the working path and selecting the timing constraint based upon the class of service. In the same field of endeavor, Jaber discloses that further wherein determining the

timing constraint comprises: identifying a class of service associated with the working path (To support voice, video, and other real-time or time-sensitive applications, the transport network 10 may provide class of service (CoS) capabilities. In one embodiment, all IP packets are mapped to one of three priority levels as they enter the transport network 10. In this embodiment, guaranteed traffic has reserved bandwidth and is guaranteed to be transported within a defined time delay. Control flow traffic is also reserved and guaranteed, but the network 10 does not guarantee delivery time delay. Best effort traffic does not have reserved bandwidth and delivery is not guaranteed by the network 10, [0030], lines 1-11) and selecting the timing constraint based upon the class of service (By distinguishing and prioritizing traffic based on its type, including CoS, service level agreement (SLA) and/or other suitable indication of importance or delivery constraints. The transport network 10 is able to deliver time-sensitive traffic within tight time constraints by delaying and/or dropping best effort traffic and other low priority traffic, [0030], lines 11-17). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the class of service designation taught in Jaber with the redundant path setup taught in Mukherjee in order to send opaque link state advertisements across the network, thus supporting path selection.

13. **Claims 11, 22, and 33** are rejected under 35 U.S.C. 103(a) as being unpatentable over Mukherjee in view of Liu (US Patent #5914798). Mukherjee clearly shows and discloses the claimed invention as applied to claims 1, 12, and 23 above, and in addition, Mukherjee further teaches wherein identifying the potential nodes that satisfy the timing constraint comprises determining selected ones of the nodes in the network that satisfy the timing constraint ([0054],

lines 7-9). Mukherjee, however, does not specifically disclose that selected ones of the nodes based upon a failure reported from any one of the source node, the destination node, and the intermediate nodes. In the same field of endeavor, Liu discloses that that selected ones of the nodes based upon a failure reported from any one of the source node, the destination node, and the intermediate nodes (see Fig. 2, Each node in the network (e.g. node 102 of FIG. 2) has the intelligence to identify a failed path, report it to other nodes of the network, and configure an alternate route, column 1, lines 44-47). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to include this method because there is a need for a telecommunications network restoration system employing high-bandwidth optical cross-connect switches enabling rapid switching of an optical network upon service disruption. Such systems must be able to rapidly identify failed optical fiber connections and devise an alternative routing plan using space and wavelength multiplexing to restore the optical network in real time.

Response to Arguments

14. Applicant's arguments filed October 2, 2007 regarding rejection of **Claims 1, 8, 9, 23, and 30-31** under 35 U.S.C. 102(e) have been fully considered but they are not persuasive. **Regarding Claim 1**, Applicant argues that Mukherjee fails to teach the claimed limitations "identifying potential nodes in the network that satisfy the timing constraint" and "selecting a protection path...spanning a second set of one or more intermediate nodes, the second intermediate nodes selected from the potential nodes." However, Mukherjee discloses a system that establishes both a primary path and a backup path when a connection request is received

from a source to a destination (paragraph 0037). In order to ensure resiliency, the system establishes restorable cycles by "attempting to find a link or series of links to form a backup path" in order to satisfy a requested failure-recovery time (paragraph 0064). Further, when the calculation is complete, "the system *selects* the section of each restorable cycle as the primary path between the source and destination" (paragraph 0064) (emphasis added). Therefore, Mukherjee teaches the claimed limitations of "identifying potential nodes in the network that satisfy the timing constraint" and "selecting a protection path...spanning a second set of one or more intermediate nodes, the second intermediate nodes selected from the potential nodes." of Claims 1, 8, 9, 23, and 30-31 under 35 U.S.C. 102(e) is maintained.

15. Applicant's arguments filed October 2, 2007 regarding rejection of **Claims 7 and 29** under 35 U.S.C. 103(a) have been fully considered but they are not persuasive. Applicant argues that the Mukherjee-Jaber combination fails to teach "identifying a class of service associated with the working path," "selecting the timing constraint based upon the class of service," or "identifying potential nodes in the network that satisfy [that] timing constraint." As discussed with regards to Claim 1 above, Mukherjee teaches identifying nodes for a protection path based on a specified failure recovery time (paragraph 0064). Jaber teaches class of service capabilities in a transport network, implemented in priority levels (e.g., guaranteed, best effort). Each priority level has a timing constraint associated with it (e.g., guaranteed traffic has a defined time delay). Therefore, Jaber teaches identifying a class of service for a working path in a transport network, and selecting a timing constraint based upon the class of service. Further, the combination of Mukherjee and Jaber teach all of the claimed limitations, with the motivation being to send opaque link state advertisements across the network, thus supporting path

selection, as clarified in the grounds of rejection for Claims 7, 18, and 29 above. Therefore, rejection of Claims 7 and 29 under 35 U.S.C. 103(a) is maintained.

16. Applicant's arguments filed October 2, 2007 regarding rejection of **Claims 2-6, 10, 11, 24-28, and 33** under 35 U.S.C. 103(a) have been fully considered but they are not persuasive. Applicant argues that the Mukherjee reference fails to disclose all of the limitations of independent Claims 1 and 23. However, Mukherjee teaches all of the limitations of Claims 1 and 23, as described in the grounds of rejection and response to Applicant's arguments above. Therefore, rejection of Claims 2-6, 10, 11, 24-28, and 33 under 35 U.S.C. 103(a) is maintained.

Conclusion

17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Chriss whose telephone number is 571-272-1774. The examiner can normally be reached on Monday - Friday, 7:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chau Nguyen can be reached on 571-272-3126. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Andrew Chriss
Examiner
Art Unit 2619

AC

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